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THE CLAIMS

What is claimed is:

1. In a method for preparing a semiconductor wafer wherein rapid thermal annealing is conducted to smooth a free surface of a superficial zone that is supported by the wafer, the improvement which comprises treating the superficial zone before conducting the rapid thermal annealing to prevent pitting in the superficial zone during the rapid thermal annealing.
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2. The method of claim 1 which further comprises conducting the rapid thermal annealing step in a non-reducing atmosphere.
- 10 3. The method of claim 1 wherein the treating comprises conducting high temperature annealing to reconstruct the superficial zone.
4. The method of claim 3 wherein the high temperature annealing is conducted in a neutral atmosphere.
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5. The method of claim 3 wherein the high temperature annealing is conducted at a temperature in the range of between about 600°C and about 1300°C.
6. The method of claim 1 wherein the treating comprises removing a disturbed portion of the superficial zone.
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7. The method of claim 6 wherein the disturbed portion is removed by chemical attack.
- 25 8. The method of claim 7 wherein the chemical attack includes at least one of wet etching or dry etching.

9. The method of claim 7 wherein the chemical attack includes sacrificial oxidation.
10. The method of claim 9 wherein the sacrificial oxidation includes an oxidation
5 step, a heat treatment step, and a deoxidation step.
11. The method of claim 10 wherein the oxidation step is conducted at a temperature in the range of between about 700°C and about 1100°C.
- 10 12. The method of claim 10 wherein the heat treatment step is conducted under at least one of a constant temperature or a variable temperature.
13. The method of claim 12 wherein the heat treatment step is conducted at a temperature in the range of between about 900°C and about 1300°C.
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14. The method of claim 10 which further comprises beginning the oxidation step with a temperature rise leading to the heat treatment step, and ending the oxidation step before ending the heat treatment step so that the oxidation step at least partially overlaps the heat treatment step.
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15. The method of claim 10 wherein the deoxidation step is conducted in a solution for a time sufficient to remove oxides in a thickness range of about one thousand to a few thousand angstroms.
- 25 16. The method of claim 15 wherein the solution is at least one of a 10% or a 20% hydrofluoric acid solution.
17. The method of claim 1 which further comprises a sacrificial oxidation step after the rapid thermal annealing.
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18. The method of claim 1 wherein the superficial zone comprises a transferred layer or a grown layer.

19. The method of claim 1 wherein the wafer includes a SOI or a SOA structure.